

Product description

The lcs+ sensor offers a non-contact measurement of the distance to an object that has to be present within the sensor's detection zone. Depending on the set window limits, a distance-proportional analogue signal is output. The window limits of the analogue output and its characteristic can be adjusted with the Teach-in procedure. One 2-colour LED indicates the state of the analogue output.

The sensor automatically detects the load put to the analogue output and switches to current output or voltage output respectively. Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl Adapter LCA-2 (optional accessory) and the LinkContol software for windows.



Operating manual

Ultrasonic sensor with one analogue output

lcs+340/IU
lcs+600/IU

Safety instructions

- Read the operating instructions prior to start-up.
- Connection, installation and adjustments may only be carried out by qualified staff.
- No safety component in accordance with the EU Machine Directive

Use for intended purpose only

lcs+ ultrasonic sensors are used for non-contact detection of objects.

Installation

- Mount the sensor at the place of fitting.
- Connect a connection cable to the M12 device plug

Start-up

- Connect the power supply.
- Carry out sensor adjustment in accordance with the diagram.

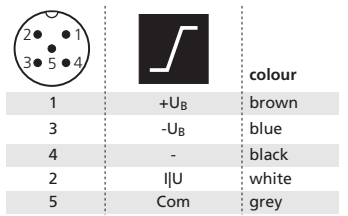


Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cable

Factory Setting

- Rising analogue characteristic curve.

- Window limits between blind zone and operating range.

Synchronisation

If under multiple sensor operation the assembly distance falls below the values shown in Fig. 2, the internal synchronisation should be used. For this purpose interconnect each pin 5 of maximum 10 sensors to be synchronised.

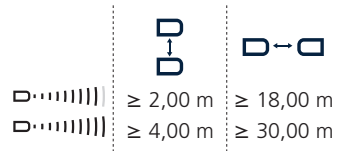


Fig. 2: Assembly distances

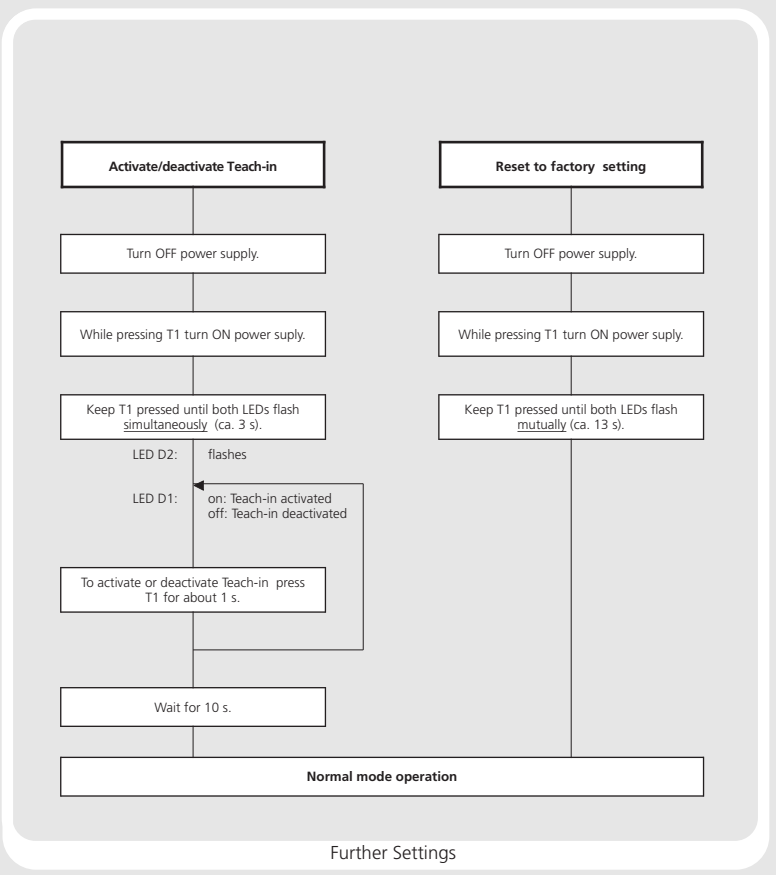
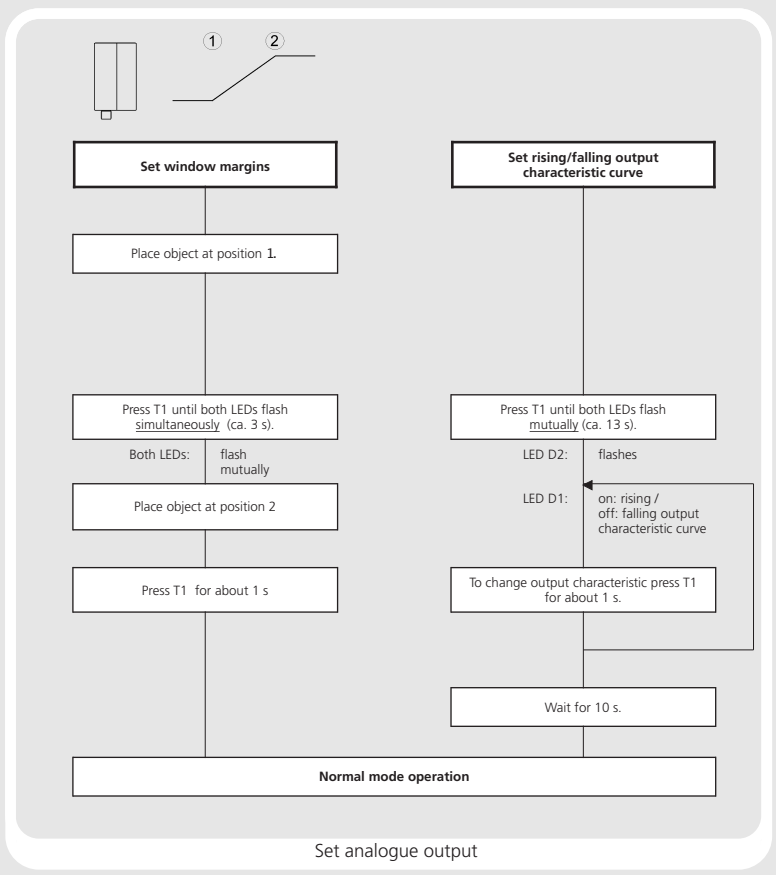
Maintenance

microsonic sensors are maintenance-free. In case of excess caked-on dirt we recommend cleaning the white sensor surface.

Notes

- The sensors of the lcs+ family have a blind zone, within which a distance measurement is not possible.
- The lcs+ sensors are equipped with an internal temperature compensation. Due to the sensors self heating, the temperature compensation reaches its optimum working-point after approx. 30 minutes of operation.
- The load put to the analogue output is detected automatically when turning power supply on.
- If an object is within the set window margins of the analogue output, then LED D1 lights up green, if the object is outside the window margins, then LED D1 lights up red.
- If no push-buttons are pressed for 20 seconds during parameter setting mode the made changes are stored and the sensor returns to normal mode operation.
- The sensor can be reset to its factory setting (see »Sensor adjustment with Teach-in procedure«).
- Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl adapter (optional accessory) and the LinkControl software for windows.

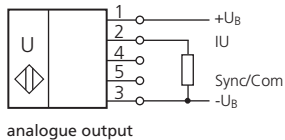
Sensor adjustment with Teach-in procedure



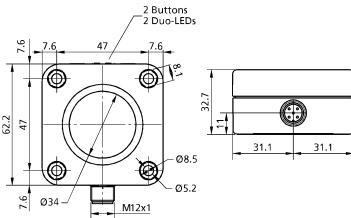
2004/108/EC

Enclosure Type 1
For use only in industrial machinery NFPA 79 applications.

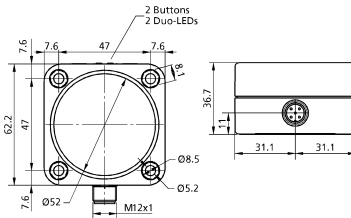
Technical data



ics+340...

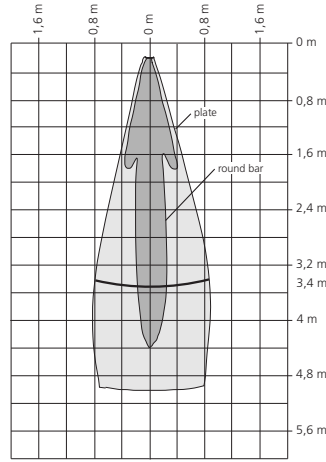


ics+600...

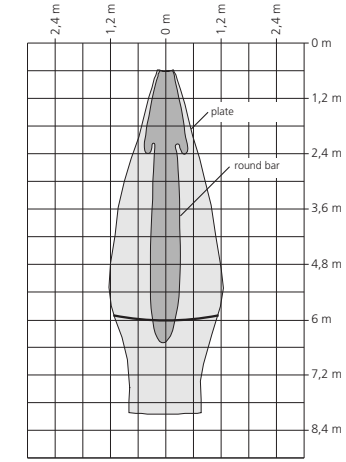


blind zone 0 to 350 mm
operating range 3,400 mm
maximum range 5,000 mm
angle of beam spread see detection zone
transducer frequency 120 kHz
resolution 0.18 mm to 1.5 mm, depending on the analogue window

detection zones for different objects:
 The dark grey areas represent the zone where it is easy to recognise the normal reflector (round bar). This indicates the typical operating range of the sensors. The light grey areas represent the zone where a very large reflector – for instance a plate – can still be recognized. The requirement here is for an optimum alignment to the sensor. It is not possible to evaluate ultrasonic reflections outside this area.



blind zone 0 to 600 mm
operating range 6,000 mm
maximum range 8,000 mm
angle of beam spread see detection zone
transducer frequency 80 kHz
resolution 0.18 mm to 2.4 mm, depending on the analogue window



reproducibility ± 0.15 %
accuracy ± 1 % (temperature drift internally compensated; may be deactivated, 0,17 %/K without compensation)
operating voltage U_B 9 V to 30 V DC, reverse polarity protection
voltage ripple ± 10 %
no-load current consumption ≤ 60 mA
housing PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67
class of protection per EN 60 529 IP 67
type of connection 5-pin M12 circular plug, PBT
controls 2 push-buttons
programmable

- Teach-in via push-buttons
- LCA-2 with LinkControl

indicator LED D1 green/red (object within/outside margins)
synchronisation internal synchronisation up to 10 sensors
operating temperature -25°C to +70°C
storage temperature -40°C to +85°C
weight 180 g
response time ¹⁾ 172 ms
time delay before availability ¹⁾ < 450 ms
norm conformity EN 60947-5-2

reproducibility ± 0.15 %
accuracy ± 1 % (temperature drift internally compensated; may be deactivated, 0,17 %/K without compensation)
operating voltage U_B 9 V to 30 V DC, reverse polarity protection
voltage ripple ± 10 %
no-load current consumption ≤ 60 mA
housing PBT, Polyester; ultrasonic transducer: polyurethane foam, epoxy resin with glass content IP 67
class of protection per EN 60 529 IP 67
type of connection 5-pin M12 circular plug, PBT
controls 2 push-buttons
programmable

- Teach-in via push-buttons
- LCA-2 with LinkControl

indicator LED D1 green/red (object within/outside margins)
synchronisation internal synchronisation up to 10 sensors
operating temperature -25°C to +70°C
storage temperature -40°C to +85°C
weight 240 g
response time ¹⁾ 240 ms
time delay before availability ¹⁾ < 450 ms
norm conformity EN 60947-5-2

order no. ics+340/IU
current output 4 - 20 mA R_L ≤ 100 Ω at 9 V ≤ U_B ≤ 15 V;
 R_L ≤ 500 Ω at U_B ≥ 15 V
voltage output 0 - 10 V rising/falling output characteristic
 R_L ≥ 100 kΩ at U_B ≥ 15 V, short-circuit-proof
 rising/falling output characteristic

order no. ics+600/IU
current output 4 - 20 mA R_L ≤ 100 Ω at 9 V ≤ U_B ≤ 15 V;
 R_L ≤ 500 Ω at U_B ≥ 15 V
voltage output 0 - 10 V rising/falling output characteristic
 R_L ≥ 100 kΩ at U_B ≥ 15 V, short-circuit-proof
 rising/falling output characteristic

¹⁾ Can be programmed with LinkControl